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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/579,855

05/17/2006

Takayuki Araki

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

JOHNSON, CONNIE P

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,855	Applicant(s) ARAKI ET AL.	
	Examiner CONNIE P. JOHNSON	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/23/2007, 5/17/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-20 are pending.
2. Claims 5-7, 10-11 and 15-17 are amended.
3. Claims 19 and 20 are new.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brunsvold et al., U.S. Patent No. 6,057,080 in view of Araki et al., U.S. Patent No. 7,214,470 B2 as evidenced by Belfort et al., WO2004/016360 A1.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and

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reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Brunsvold teaches a top antireflective layer comprising a poly(alpha-trifluoromethyl acrylic acid) (col. 3, line 62), an ammonium or amine compound (col. 3, lines 65-67 and col. 4, lines 1-7). Example 5 of the reference shows a method of making a patterned photoresist composition by applying a photoresist to a silicon substrate and overcoating the photoresist with the antireflective film of example 3. The poly(alpha-trifluoromethyl acrylic acid) meets the limitations of formula (1) of claim 7. Poly(alpha-trifluoromethyl acrylic acid) is known to have at least one carboxylic acid group (-COOH) and a pKa of 2.3 as evidenced by Belfort, [0074]. The Brunsvold teaches using perfluorinated polymers in the top antireflective layer for ease of removal with an alkaline developer. Water is used as a solvent in the antireflective layer as shown in example 2 (col. 4, lines 65-67). The polymer solution has a water content of 95% by weight of the composition. Brunsvold does not teach that the poly(alpha-trifluoromethyl acrylic acid) has a molecular weight of 31,000 to 750,000 nor the mass of fluorine in the polymer.

However, Araki teaches fluorinated polymers with a structure as in formulas (1) and (14). The fluorinated polymers may be used as a base polymer in an antireflective coating (abstract). Formula (14) has the same base structure as a poly(alpha-

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trifluoromethyl acrylic acid). Araki also teaches that the fluorinated polymers have a molecular weight of 500 to 1,000,000 (col. 12, lines 11-12). The -COOH and -OH groups in the fluorinated polymer have a pK_a value of less than 10 (col. 31, lines 1-9 and experimental example 2). The fluorinated polymers may comprise -OH and -COOH groups (col. 13, lines 5-10). The base polymer structure (15) has a fluorine content of 60% by mass, based on the molecular weight and has 0.26 moles of -COOH per 100g of the fluorinated polymer when Z^2 is -COOH . The fluorinated polymer in column 14, line 22 also meets the limitations of (M1) in claim 7. The fluorinated has the following formula $(\text{CH}^2=\text{CHCF}^2\text{CF}^2\text{CF}^2\text{CF}^2\text{-Z}^2)$, wherein Z^2 is a -COOH group. The M1 formula is present in an amount of not less than 30mol% (col. 29, lines 7-11). Further, any of the fluorinated polymers taught by Araki would meet the limitations of claim 7 when a and c are zero as claimed. As for claim 9, formula (1) in Araki is representative of formula 3. It would have been obvious to one of ordinary skill in the art to use the fluorinated polymers of Araki in the antireflective layer of Brunsvold to maintain a low refractive index and improve optical characteristics as taught by Araki ((col. 18, lines 61-65 and abstract).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CONNIE P. JOHNSON whose telephone number is (571)272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Connie P. Johnson
Examiner
Art Unit 1795

/Cynthia H Kelly/
Supervisory Patent Examiner, Art Unit 1795